



## Ecosystem Management Program BULLETIN



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**ARMY NATURAL RESOURCE STAFF HELP MARINES REMOVE MANGROVES.** This March, Army Natural Resource Staff visited the Kāneʻohe Marine Corps Base for their quarterly Staff Education Day. The trip gave Army staff a chance to observe and participate in natural resource projects undertaken by Marine Corps Base Environmental staff headed by Dr. Diane Drigot. The morning started at sunrise with a special visit through the firing range to the Red-Footed Booby colony on the far Northeastern tip of Mōkapu Peninsula. These colorful, large birds floated overhead in air currents, and squawked from nests perched in kiawe (*Prosopis pallida*) trees as well as artificial 'trees' installed by the environmental program to increase nesting habitat. This nesting colony, rare on the main Hawaiian Islands, sits at the edge of the Base's firing range. Staff were impressed by the newest fire management tools which included huge water cannons strategically placed throughout the colony to control fires started on the range that threaten the birds.



Red footed booby (*Sula sula*)

After gawking and birds, views of the windward coast, and rainbows, it was time for our staff to help in an ongoing mangrove removal project in the Nuʻupia fishponds. Army staff used chainsaws, shovels, handsaws and a lot of grunts to make a major

dent in the invasive mangrove population. In addition to restoring a culturally significant fishpond, mangrove removal improves water quality, and has created habitat for endangered Hawaiian stilts. When everyone had a thick enough layer of mud crusted to their legs, staff sat for lunch at North Beach to hear some cultural, historical, and ecological history of the peninsula from Dr. Drigot. The day concluded with visits to a few more habitat restoration projects, and ended with a spectacular 360° view from Hawaiʻiloa the highest point on the peninsula.



Oahu Natural Resource Staff on Mokapu Peninsula, Kaneohe

**ARMY CONTRACTS INVERTEBRATE SURVEYS TO LOOK FOR NEWLY LISTED FLIES.** The Oʻahu Natural Resource Program has contracted Dr. Steven Montgomery, an expert on Hawaiian *Drosophila* picture-wing flies, to conduct surveys for the newly listed *Drosophila*. Six of the twelve newly endangered picture-wings are found on Oʻahu on host plant species that occur at Army training areas. The Army is obligated as a federal agency to conduct surveys for federally listed species so that the potential impacts from military training to these resources can be assessed. There are only two point locations recorded for any of the listed flies

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from Schofield Barracks, West Range. This certainly does not represent a complete picture of the actual distribution of native picture-wing flies on O'ahu Army training lands as no thorough surveys have ever been conducted.



Dr. Steven Montgomery

The method used to survey for a fly is rather odiferous. Rotten baits are concocted from rotten mushrooms and baby food impregnated with yeast. The rotten juices are applied to thin sponges which are draped over horizontal resting sites in protected forests where host plants are present. All six of the listed O'ahu *Drosophila* have host plant restrictions. Host plants include, *Charpentiera*, *Urera spp*, *Lobelia spp*, *Pleomele spp*, *Cheirodendron spp* and *Tetraplasandra spp*. Sites for survey were identified based on concentrations of these host species. Surveys are on going, thus far the following native picture wings have been observed; *D. crucigera*, *D. punalua*, *D. turbata* and *D. ambochila*. None of the endangered picture wings have been found yet but surveys have only just begun. All of our staff will have the opportunity to spend time with Steve

Montgomery and learn more about the native arthropods on O'ahu Army training lands.



"Stinky" baits laid out to attract flies

**NEW ZEALAND PREDATOR CONTROL EXPERTS VISIT MĀKUA VALLEY.** The University of Hawaii at Mānoa hosted a conference "Rats, Humans, and Their Impacts on Islands: Integrating Historical and Contemporary Ecology" over the week of March 27-31. Internationally renowned anthropologists, geneticists, and ecologists spent the week sharing ideas and experiences about rat impacts to native ecosystems and control techniques. Rats are a major threat to the O'ahu 'Elepaio (*Chasiempis sandwichensis ssp. ibidi*), the Kāhuli tree snail (*Achatinella mustelina*), and several plant species.



Polynesian rat (*Rattus exulans*) preying on a bird's nest



Our O'ahu staff was fortunate to have met two New Zealand predator control experts, Mr. Darren Peters and Mr. Lindsay Wilson. Both of these Biologists work for the New Zealand Department of Conservation. They shared with our staff vast amounts of information on effective predator control and monitoring. In particular, we tapped their knowledge base regarding rat control. We took them on a site visit to Kahanahāiki Management Unit at Mākua Military Reservation. Accompanying us were some representatives of the U.S. Fish and Wildlife Service Invasive Species Program and a representative from Pono Pacific Land Management Ltd (the company whom we contract to conduct rat control to protect O'ahu 'Elepaio). Darren and Lindsay had so many insightful comments and shared with us details about their first hand experiences in New Zealand. They shared with our program the Department of Conservation's scientifically based "best management practices" for control of different predators including rats and cats using ground-based and aerial dispersal methods. These protocols have impressive details about trap design and grid placement as they are meant for new conservation projects just getting started.



Predator experts visit State "snail jail"

Our staff was amazed at scale of their predator control and other conservation projects. Our predator control is conducted on a rather small-scale compared to their rat control grids which span thousands of hectares. The networking has provided a new perspective for our staff in the way we conduct predator control. In the future, we will try to enlarge the existing grids we

manage where feasible. In addition, their experiences and those shared at the conference reinforce the importance of labeling rodenticide for aerial application in Hawaii.

The work that Darren and Lindsay do is critical to the protection of New Zealand's unique wildlife and "bush". We are thrilled to have made such experienced contacts in New Zealand and hope they return to visit Hawai'i soon and perhaps we can voyage to visit them.



Kāhuli tree snail (*Achatinella mustelina*)

**EARTH DAY ON THE BIG ISLAND.** As part of Earth Week 2007, Pōhakuloa Training Area welcomed over 100 fourth and fifth grade students from Hilo Union and Kea'au Elementary. During their overnight stay at the installation, students interacted with both military and civilian staff, including U.S. Army soldiers, U.S. Marines, firefighters, biologists and archaeologists. Students were exposed to a wide range of experiences, from a sunrise reveille and formation run around base camp with the soldiers, to learning about PTA's unique natural and cultural resources with Environmental Office staff. Students also had the opportunity to ride inside a Stryker urban assault vehicle, view the inside of a UH-60 (CASEVAC) helicopter, participate in a show-and-tell with the PTA Fire and Rescue Department, and receive survival training at the base medical facility.

A central component of this year's Earth Week event at PTA was a tour of the installation's Rare Plant Facility and Interpretive Garden, which host



several species of plants that are federally listed as threatened or endangered, as well as common native and alien dryland plants. Students learned more about Pōhakuloa's natural resources with PTA Natural Resources Specialists Tiana Sudduth, Erin Foley, Sarah Knox, and Brian Tucker, and Integrated Training Area Management (ITAM) Specialist Shalan Crysdale. The students were broken up into groups and engaged in a number of different tasks including: seed collection from a variety of native plant species around base camp such as māmane (*Sophora chrysophylla*), naio (*Myoporum sandwicense*), 'a'ali'i (*Dodonaea viscosa*), and 'āweoweo (*Chenopodium oahuense*); preparation of seeds for outplanting; and preparation of seed germination trays. Some of the students prepared bags of 'a'ali'i seeds to take home and grow around their own houses.



Students prepare seeds for propagation

Next, students learned about invasive species at Pōhakuloa. Braving the cold and windy weather, the students inundated base camp once more and were taught weed suppression techniques. One group of students pulled weeds around the PTA Headquarters Building, filling an impressive 19 trash bags (one trash bag per student) in under an hour! Other groups learned how to collect and dispose of fountain grass (*Pennisetum setaceum*) seeds, helping to prevent their dispersal. In addition, students learned to tell the difference between native and invasive plants, and learned to identify different species by both their common and scientific names.

Finally, students participated in an endangered plant scavenger hunt in the rare plant facility. Students

were given clues describing each of the five species, and were asked to identify the plants. Clues described what each plant looked like, smelled like, and felt like. The students were invited to touch the sticky flowers of the *S. lanceolata* and the prickly thorns of the *S. incompletum*. Correct answers were awarded with prizes such as new school supplies.



Students examine the installations rare species

The Earth Week 2007 event benefited both the PTA natural resources program and the students involved. The students learned about Pōhakuloa's natural resources and got some valuable work done, while most importantly...having fun!

Also of note, PTA Natural and Cultural Resource Staff manned a booth at both the Hilo and Kona events. The booths displayed several posters about the unique saddle environment and steps the Army is taking to protect and perpetuate both the natural and cultural resources. The Cultural Resources staff encouraged visitors to examine an artifact display and to participate in a quiz about past uses of seven artifacts common to Pōhakuloa. Staff and participants exchanged ideas about past uses of the artifacts. Several new ideas on the usage of artifacts were suggested by visitors, including one memorable explanation for an 'opihi shell with a hole. The young girl confidently explained that it was obviously placed over the user's eye for protection when producing stone tools, an idea definitely worth taking into consideration.

Children and adults walked away from the booths more aware of this desolate part of the island, its



unique and delicate environment, and the steps the Army is taking to protect it. Numerous Earth Day participants had questions about out plantings and the Army's activities around cultural sites. Many were pleased with the extensive stewardship the Army has placed on the land and wanted to know how they could get involved.



Claire Cothorn

**ENVIRONMENTAL WELCOMES TWO NEW CULTURAL RESOURCE STAFF MEMBERS.** Claire Cothorn is originally from Natchez, MS. She received a Bachelors Degree in Interior Design from Mississippi State University. Claire moved to O'ahu to be a live-in nanny for a family on Schofield Barracks. She was originally hired as a temporary employee and is now a part-time Historic Preservation Technician. Claire will be working on the National Historic Landmark District Nomination for Tripler and Wheeler. She will also be assisting with the renovations at Kilauea Military Camp. Welcome Claire!

Esme Hammerle is from Kāne'ohe, Hawaii. She received a Bachelors Degree with honors in Anthropology from the University of Hawai'i, Mānoa. Esme is an archaeologist with experience in archival research, mapping, drafting, excavation, monitoring, survey, and laboratory analysis in Arizona, California, Egypt, Greece and the island of O'ahu. Esme joins the Cultural Resources Section as a Specialist.



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## **Ecosystem Management Program BULLETIN**

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